

Appl. No. 10/816,820
Amendment dated: February 15, 2006
Reply to OA of: November 16, 2005

REMARKS

Applicants have amended the claims to more particularly define the invention taking into consideration the outstanding Official Action. The allowance of claims 9-19 is very much appreciated as is the indication that claims 2, 4, 6 and 7 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The limitation from claim 6 has been added to a modified version of claim 1 in the form of new claim 20. New claim 20 does not correspond exactly to a combination of claims 1 and allowable claim 6 but is believed to obviate the rejection of claim 1 and is fully supported by the specification as originally filed. In this regard, the amendment to claim 1 added in claim 20 requires the forming step of an oxide layer after the formation of the second trench, which amendment is based on the description on page 4, lines 5-7 of the specification and Fig. 1d

New claim 20 is also believed to be in condition for allowance. Those claims which were formerly dependent on claim 1 have been made dependent on new claim 20 and are also allowable. Claims 1 and 6 have been cancelled from the application as redundant. A minor clarifying amendment has been made to allowed claim 17 which is still believed to be allowable. Claims 2-5 and 7-20 remain in the application. Applicants most respectfully submit that all the claims now present in the application are in full compliance with 35 U.S.C. §112 and are clearly patentable over the references of record.

The rejection of claim 1 under 35 USC 102 as anticipated by U.S. Patent No. 6,387,773 (hereinafter '773) has been carefully considered but is most respectfully traversed in view of the amendment to claim 1, which is now claim 20. In this regard, Applicants wish to direct the Examiner's attention to MPEP § 2131 which states that to anticipate a claim, the reference must teach every element of the claim.

Appl. No. 10/816,820
Amendment dated: February 15, 2006
Reply to OA of: November 16, 2005

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed.Cir. 1990).

Applicants most respectfully submit that claim subject matter is not anticipated by the applied reference. Applicants wish to note that the purpose disclosed in the '773 patent is to improve the decreasing of the etching rate with the increasing of the etching depth in substrate while the purpose of the presently claimed invention is to overcome the problem that the overall electrical performance of the capacitor is influenced by the worsened etching uniformity inside the trench for the deep trench process is restricted in process capability with the gradual shrinking of the dimension of components. Moreover, the formation of certain trench depth in the '773 patent is done after being etched/passivated k times (column lines 4-10) and each with the same depth that is unlike the technical features of the present invention, for in which the amended claim 1 (new claim 20) indicates three etching processes, each with a different depth, are to be done to form a certain trench depth, as shown in Fig. 1a-1f of the present application. Moreover, the '773 patent does not disclose the forming step of an oxide layer as required in the new claim 20.

Furthermore, the trench region in the '773 patent is formed by setting a predetermined ratio between isotropic and anisotropic etching component, making the partial trench region has a cross-sectional profile deviating from an essentially constant cross-sectional profile toward a larger cross-sectional profile, however, in the present invention each etching process does not change the cross-sectional profile but only the depth.

Appl. No. 10/816,820
Amendment dated: February 15, 2006
Reply to OA of: November 16, 2005

Thus the forming methods for trench capacitors of the '773 patent and the new claim 20 are substantially different. Accordingly, it is most respectfully requested that the rejection on the grounds of anticipation over the '773 patent be withdrawn.

The rejection of claims 3, 5, and 8 under 35 USC 103(a) has been carefully considered but is most respectfully traversed in view of the amendments to the and the above comments with respect to the differences between the claimed invention and the prior art. In this regard, Applicants wish to direct the Examiner's attention to the basic requirements of a prima facie case of obviousness as set forth in the MPEP § 2143. This section states that to establish a prima facie case of obviousness, three basic criteria first must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Section 2143.03 states that all claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Applicants also most respectfully direct the Examiner's attention to MPEP § 2144.08 (page 2100-114) wherein it is stated that Office personnel should consider all rebuttal argument and evidence presented by applicant and the citation of In re Soni for error in not considering evidence presented in the specification.

Appl. No. 10/816,820
Amendment dated: February 15, 2006
Reply to OA of: November 16, 2005

Applicants also believe that the admitted prior art and the present invention disclosed in the captioned application are different for the formation of the prior art deep trench capacitor is completed by forming a deep trench with desired depth in a substrate at once while the formation of the present invention is done by forming a deep trench multiple times in different depths in a substrate.

In addition, the '773 patent is substantially different from the amended claim 20 as mentioned above. As a result, one skilled in the art would have no motivation to conceive the claimed invention by combining the disclosures of the '773 patent and the admitted prior art. In re Fritch, 23 USPQ 1780, 1784(Fed Cir. 1992) ("It is impermissible to engage in hindsight reconstruction of the claimed invention, using the applicant's structure as a template and selecting elements from references to fill the gaps.). Accordingly, claims 3, 5, and 8 are unobvious and the rejection of these claims should be withdrawn.

The indication that claims 2, 4, 6 and 7 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims has been noted. In view of the amendments to the claims it is believed that this claims are now allowable. Accordingly, it is most respectfully requested that the objection to these claims be withdrawn and the claims allowed in the next Official Action.

Applicants note the additional prior art of record but not applied in the Official Action. Since this art was not applied no additional comments with this prior art is necessary.


In view of the above comments and further amendments to the specification and claims, favorable reconsideration and allowance of all of the claims now present in the

Appl. No. 10/816,820
Amendment dated: February 15, 2006
Reply to OA of: November 16, 2005

application are most respectfully requested.

Respectfully submitted,

BACON & THOMAS, PLLC

By: 
Richard E. Fichter
Registration No. 26,382

625 Slaters Lane, 4th Fl.
Alexandria, Virginia 22314
Phone: (703) 683-0500
Facsimile: (703) 683-1080

REF:ref
A01.wpd

February 15, 2006